Space Weather Forecast

Issued on Wednesday 13 November 2024 at 12:59 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Minor/Moderate radio blackouts (R1/R2) likely throughout. Slight chance of G1/Minor Geomagnetic Storm intervals, mainly Day 1 (13 Nov).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Moderate during the past 24 hours with an isolated Moderate-class flare at 12/0022 UTC from the largest and most complex region near south centre disc. It consists of two main clusters of mature spots with a small area of magnetic complexity in the lead group. Another region close to the southwest limb is now barely visible so it is difficult to assess as it rotates off the disc. A further region in the southwest, now looks to be a simple group. The remaining regions are relatively small and simple.

No Coronal Mass Ejections (CMEs) observed over the past 24 hours are considered to have an Earth-directed component.

Solar Wind / Geomagnetic Activity: Solar winds were indicative of a slow regime, with the onset of a coronal hole fast wind just beginning. The wind speed varied between 330-370 km/s. The interplanetary magnetic field (IMF) was weak for much of the period, becoming moderate after 13/1030 UTC. The north-south component varied weakly until later in the period when it became moderately southward directed. Geomagnetic activity was Quiet (Kp 0-2) throughout.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Isolated Moderate-class flares are likely, with a slight chance of Strong flares, mostly from the complex central sunspot.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs currently feature in the forecast.

Connection to a coronal hole fast wind is expected during Day 1 (13 Nov) with slightly elevated wind speeds which could then persist for much of the period. Geomagnetic activity is expected to be largely Quiet to Unsettled (Kp 0-3). On Day 1 (12 Nov), Unsettled to Active (Kp 3-4) conditions are possible with a slight chance of G1/Minor Geomagnetic Storm intervals (Kp 5). During Days 2-4 there remains a very slight chance of further G1/Minor Geomagnetic Storm intervals.

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Energetic Particles / Solar Radiation: High energy proton flux is most likely to remain at background levels with Solar Radiation storms unlikely. There is a slight chance of S1/Minor solar radiation storms, mainly due to the potential for flaring from the largest sunspot group as it rotates westward across the Sun.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	10	5	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	60	60	60	55
Very Active	R3-R5 (X Class)	No	10	10	10	10

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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